RECEIVED
CENTRAL FAX CENTER
FEB 13 2008

IN THE CLAIMS

1. (Withdrawn) An apparatus for self-phase control in an amplifier having a stimulated Brillouin scattering phase conjugate mirror, comprising:

a reflector arranged at an arbitrary position placed behind the stimulated Brillouin scattering phase conjugate mirror; and

a fine driver for finely driving the reflector,

wherein the fine driver is operated to control a distance between the reflector and the phase conjugate mirror so as to control a position at which stimulated Brillouin scattering occurs in the stimulated Brillouin scattering phase conjugate mirror, thereby controlling phases of laser beams that are input to the stimulated Brillouin scattering phase conjugate mirror and reflected according to the stimulated Brillouin scattering.

2. (Withdrawn)The apparatus as claimed in claim 1, further comprising a focusing lens that is arranged at an arbitrary position placed before the stimulated Brillouin scattering phase conjugate mirror, to focus the laser beams on an arbitrary point of the stimulated Brillouin scattering phase conjugate mirror.

3. (Withdrawn) The apparatus as claimed in claim 1, wherein the reflector is a concave lens and the fine driver is a piezoelectric element.

4. (Withdrawn) An apparatus for self-phase control in an amplifier having a stimulated Brillouin scattering phase conjugate mirror, comprising:

a beam splitter 61 for splitting a laser beam into at least two laser beams;

stimulated Brillouin scattering phase conjugate mirrors 63 and 73 for reflecting the laser beams input from the beam splitter in a direction opposite to the direction of laser beams that are input according to stimulated Brillouin scattering;

reflectors 82 and 92 that are respectively located behind the phase conjugate mirrors and input beams that have passed through the phase conjugate mirrors to the phase conjugate mirrors again; and

fine drivers 84 and 94 for finely driving the reflectors, respectively,

wherein the fine drivers are operated to control respective distances 66 and 76 between the reflectors and phase conjugate mirrors so as to control positions at which stimulated Brillouin scattering occurs in the phase conjugate mirrors, thereby making a phase difference between laser beams reflected by the scattering "0".

5. (Currently Amended) An apparatus for self-phase control in an amplifier having a stimulated Brillouin scattering phase conjugate mirror, comprising:

a laser beam generator for providing a laser beam to the amplifier;

a plurality of phase conjugate mirror optical amplifiers ~~220, 250 and 350~~ for amplifying the laser beam; and

a plurality of light interrupters ~~210, 240 and 300~~ that are respectively paired with the optical amplifiers and interrupt beams amplified by the optical amplifiers and reflected to the laser beam generator;

wherein the optical amplifiers ~~250 and 350~~ and the light interrupter ~~300~~ split the laser beam into at least two beams and amplify or interrupt the beams, each of the optical amplifiers ~~250 and 350~~ and light interrupter ~~300~~ comprises: a beam splitter for splitting a laser beam into at least two laser beams; stimulated Brillouin scattering phase conjugate mirrors for reflecting the laser beams input from the beam splitter in a direction opposite to the direction of laser beams that are input according to stimulated Brillouin scattering; reflectors ~~261, 271, 310 and 320~~ that are respectively located behind the phase conjugate

mirrors and input beams that have passed through the phase conjugate mirrors to the phase conjugate mirrors again; and fine drivers ~~260, 270, 311 and 321~~ for finely driving the reflectors, respectively, and the fine drivers are configured ~~operated~~ to control respective distances between the reflectors and phase conjugate mirrors so as to control positions at which stimulated Brillouin scattering occurs in the phase conjugate mirrors, thereby making a phase difference between laser beams reflected by the scattering "0".

6. (Original) The apparatus as claimed in claim 4 or 5, further comprising a focusing lens that is arranged at an arbitrary position placed before each of the stimulated Brillouin scattering phase conjugate mirrors, to focus the incident laser beams on an arbitrary point of each stimulated Brillouin scattering phase conjugate mirror, thereby making the phase difference between the laser beams reflected by the scattering "0".

7. (Original) The apparatus as claimed in claim 4 or 5, wherein the reflectors use concave lenses and the fine drivers use piezoelectric elements to make the phase difference between the laser beams reflected by the scattering "0".

8. (Withdrawn) An apparatus for self-phase control in an amplifier having a stimulated Brillouin scattering phase conjugate mirror, which includes a beam splitter for splitting a laser beam into a plurality of beams, a stimulated Brillouin scattering phase conjugate mirror to which the plurality of split beams are input, a reflector located behind the stimulated Brillouin scattering phase conjugate mirror, and a fine driver for finely controlling the reflector and makes a phase difference between laser beams that are scattered in the stimulated Brillouin scattering phase conjugate mirror and reflected therefrom become "0", the apparatus comprising:

light path converters 131, 132 and 133 for changing paths of reflected laser beams 104, 114 and 124;

light interference means 134, 135 and 136 for making the laser beams 104', 114' and 124' whose paths have been changed by the light path converters interfere with one another;

a light detector 150 for detecting the interfering beams; and

a central controller 160 for analyzing the result detected by the light detector and driving the fine driver,

wherein a signal input from the light detector is confirmed to control the fine driver through the central controller, to thereby make the phase difference between the laser beams that are reflected by the scattering "0".

9. (Withdrawn) The apparatus as claimed in claim 8, wherein the reflector uses a concave lens and the fine driver uses a piezoelectric element to make the phase difference between the laser beams reflected by the scattering "0".

10. (Withdrawn) The apparatus as claimed in claim 8, wherein the light detector uses a CCD camera and the central controller includes a piezoelectric element driver, to make the phase difference between the laser beams reflected by the scattering "0".

11. (Withdrawn) A method for self-phase control in an amplifier having stimulated Brillouin scattering phase conjugate mirrors, in which a procedure of making a phase difference between laser beams reflected from the phase conjugate mirrors "0" using reflectors located behind the phase conjugate mirrors and a fine driver for finely controlling the reflectors, comprising:

a first step of inputting laser beams 104', ..., 114' and 124' reflected from the phase conjugate mirrors to a light detector 150 through light path converters 131 and 132;

a second step of using one of the reflected laser beams as a reference laser beam 104' and making the reference laser beam interfere with another reflected laser beam 114';

a third step of detecting the interference result and finely driving piezoelectric elements 109 and 119 to control the positions of the reflectors 108, 118 and 128, to thereby make a phase difference between the two laser beams 104' and 104' become "0";

a fourth step of making the reference laser beam interfere with another reflected laser beam 124' and finely driving the piezoelectric elements 109 and 129 through a central controller 160 to control the positions of the reflectors 108, 118 and 120, to thereby make a phase difference between the two reflected laser beams 104' and 124' become "0";

a fifth step of making the reference laser beam interfere with another reflected laser beam that does not interfere with the reference laser beam and controlling the positions of the reflectors to make a phase difference between the two laser beams becomes "0"; and

a sixth step of repeating the fifth step to sequentially make the reference laser beam interfere with remaining reflected laser beams, to thereby make phase differences between interfering laser beams "0".